

7. How many valence electrons does each of the following elements contain?

a) Ca 2

b) Ga 3

c) P 5

d) Si 4

e) Br 7

f) K 1

8. How many electron shells do each of the elements in #7 contain?

a) 4

b) 4

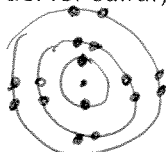
c) 3

d) 3

e) 4

f) 4

9. Draw a shell model for sulfur, S. It has 6 valence electrons and 10 core electrons.



10. Why do elements in the same group have similar properties?

Same # valence e^- ; same valence e^- configuration

LESSON 19: Ions

11. Why are noble gases so stable?

Full valence shell with 8 e^-

12. What is the difference between a cation and an anion?

Cation: positive charge (has lost e^-)

Anion: negative

13. What are the ions formed by:

a) Ca Ca^{2+}

b) B B^{3+}

c) P P^{3-}

d) Cl Cl^-

e) Ba Ba^{2+}

f) N N^{3-}

14. Is there a pattern on the periodic table for ion charges?

Elements in the same group have the same charge.

LESSON 22: Polyatomic Ions

21. What is the difference between polyatomic and monatomic ions?

Polyatomic: more than one atom (element)

Monatomic: one atom (element)

22. Write the formulas for the following polyatomic ions.

NAME	FORMULA
carbonate	CO_3^{2-}
hydroxide	OH^-
ammonium	NH_4^+
phosphate	PO_4^{3-}
sulfate	SO_4^{2-}
nitrate	NO_3^-

23. Write the formulas for the compounds created from each pair:

a) Na^+ and SO_4^{2-} Na_2SO_4

c) lithium and phosphate Li_3PO_4

b) Mg^{2+} and PO_4^{3-} $\text{Mg}_3(\text{PO}_4)_2$

d) magnesium and hydroxide $\text{Mg}(\text{OH})_2$

24. Write the formulas of the following compounds:

a) sodium nitrate NaNO_3

c) ammonium chloride

NH_4Cl

b) ammonium phosphide

$(\text{NH}_4)_3\text{P}$

d) aluminum carbonate

$\text{Al}_2(\text{CO}_3)_3$

25. Name the following compounds:

a) MgCO_3

magnesium carbonate

b) Li_2SO_4

lithium sulfate

c) AlPO_4

aluminum phosphate

